



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/598,290

08/23/2006

Kaoru Hirata

SUGI0169

2397

24203 7590 03/20/2009

GRIFFIN & SZIPL, PC
SUITE PH-1
2300 NINTH STREET, SOUTH
ARLINGTON, VA 22204

EXAMINER

MCCALISTER, WILLIAM M

ART UNIT

PAPER NUMBER

3753

MAIL DATE

DELIVERY MODE

03/20/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/598,290	Applicant(s) HIRATA ET AL.	
	Examiner WILLIAM MCCALISTER	Art Unit 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/19/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 3753

4. Claims 1, 2, 5, 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki (US 6,981,410) in view of James (US 2002/0100316).

Regarding claim 1, Seki discloses a corrosion-resistant sensor for measuring mass flow rate of fluid, comprising:

a mass flow rate sensor part comprising

- i. a corrosion-resistant metal substrate (124, col. 3 lines 53-65); and
- ii. a thin film (112) forming a temperature sensor (121A, 121B) and a heater (120) installed on a back face side of a fluid contacting surface of the corrosion-resistant substrate.

Seki does not disclose the pressure sensor. James teaches that it was known in the art of thermal mass flow sensors to include a pressure sensor part (52) which is embodied as a strain sensor element (see para. 26). To measure the pressure of Seki's flowing fluid, it would have been obvious to include a pressure sensor along side Seki's other flow sensors, as taught by James. (The use of thin metal films to form strain sensors was known in the art at the time of invention and it would have been obvious to form James' strain sensor as such.)

Regarding claim 2, Seki discloses the corrosion-resistant metal substrate (124) to be fitted into a mounting groove of a corrosion-resistant metal made sensor base (102, 104, 105) so that the fluid contacting surface is exposed outwardly, and a peripheral

Art Unit: 3753

edge (124A, 103b) of the corrosion-resistant metal substrate to be hermetically welded to the sensor base (102, see col. 3 lines 40-42).

Regarding claims 5 and 11, Seki and James disclose the invention as claimed with exception to the fluid controller. The use of mass flow controllers (i.e. - a control valve with feedback pressure and flow rate sensors) was notoriously well-known in the art at the time of invention. It would have been obvious to utilize Seki's sensor with a control valve and control electronics to obtain a feedback MFC.

Regarding claim 6, Seki and James disclose the invention as claimed, with exception to the use of a metal gasket to seal the sensor base (102) to a fluid passage. However, the use of metal gaskets was well-known in the art at the time of invention and it would have been obvious to use a metal gasket to create a seal between Seki's sensor base and the fluid passage to which the sensor base is attached. (Gaskets seal via the compressive force (thrust) applied thereto, with rigidity of the surrounding structural components being necessary to the application of such force.)

5. Claims 1-3, 5-7, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki, in view of Kuno (US 3,737,684) taken with James.

Regarding claims 1, 3 and 7, Seki discloses the invention as claimed with exception to the pressure sensor (see the analysis above). Kuno teaches that drift in the

Art Unit: 3753

temperature-resistance characteristics of temperature sensors can be corrected using a pressure sensor (see col. 9 lines 35-47), and James teaches a convenient arrangement for including a pressure/strain sensor with a thermal mass flow sensor, similar to that disclosed by Seki. To correct the drift affecting Seki's temperature sensors, it would have been obvious to one of ordinary skill in the art at the time of invention to use a pressure/strain sensor as taught by Kuno and James.

Regarding claims 2, 5, 6, and 11, see the corresponding analyses above.

Regarding claim 12, see the analysis of claim 5 above.

6. Claims 3, 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of James, further in view of Kuno.

Regarding claims 3 and 7, Seki and James disclose the invention as claimed with exception to use of the pressure sensor to correct output drift of the flow rate sensor. However, Kuno teaches that drift in the temperature-resistance characteristics of temperature sensors can be corrected using a pressure sensor (col. 9 lines 35-47). To correct for errors in temperature readings due to fluid pressure fluctuations, it would have been obvious to compensate using the pressure sensor in Seki's device, as taught by Kuno.

Art Unit: 3753

Regarding claim 12, see the analysis of claim 5 above.

7. Claims 4, 8, 9, 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of James (alternatively over Seki, James and Kuno, under either paragraph 5 or 6 above), in view of Kinard (US 5,393,351).

Seki and James (alternatively with Kuno) disclose the invention as claimed, including an insulated film (113) formed on the back side of the fluid contacting surface of the corrosion-resistant metal substrate, and discloses a metal film to form the sensor elements (col. 4 lines 38-50; regarding the strain sensor, see the analysis of claim 1). Seki nor James discloses a protection film to cover the insulating film and the metal film. Kinard teaches that it was known in the art at the time of invention to protect a metal film with a protection film (266, 268). To protect Seki's metal film, it would have been obvious to use a protection film as taught by Kinard.

Regarding claim 13, see the analysis of claim 5 above.

8. Claims 1-3, 5-7, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Kuno.

Regarding claims 1 and 3, Seki discloses a corrosion-resistant sensor for measuring mass flow rate of fluid, comprising:

Art Unit: 3753

a mass flow rate sensor part comprising

- i. a corrosion-resistant metal substrate (124, col. 3 lines 53-65); and
- ii. a thin film (112) forming a temperature sensor (121A, 121B) and a heater (120) installed on a back face side of a fluid contacting surface of the corrosion-resistant substrate.

Seki does not disclose the pressure sensor. Kuno teaches that drift in the temperature-resistance characteristics of temperature sensors can be corrected using a pressure sensor (col. 9 lines 35-47). To correct for errors in temperature readings due to fluid pressure fluctuations, it would have been obvious to compensate using a pressure sensor in Seki's device, as taught by Kuno. (The use of thin metal films to form strain sensors was known in the art at the time of invention and it would have been obvious to form Seki's strain sensor as such.)

Regarding claim 2, Seki discloses the corrosion-resistant metal substrate (124) to be fitted into a mounting groove of a corrosion-resistant metal made sensor base (102, 104, 105) so that the fluid contacting surface is exposed outwardly, and a peripheral edge (124A, 103b) of the corrosion-resistant metal substrate to be hermetically welded to the sensor base (102, see col. 3 lines 40-42).

Regarding claims 5 and 11, Seki discloses the invention as claimed with exception to the fluid controller. The use of mass flow controllers (i.e. - a control valve with feedback

Art Unit: 3753

pressure and flow rate sensors) was notoriously well-known in the art at the time of invention. It would have been obvious to utilize Seki's sensor with a control valve and control electronics to obtain a feedback MFC.

Regarding claim 6, Seki discloses the invention as claimed, with exception to the use of a metal gasket to seal the sensor base (102) to a fluid passage. However, the use of metal gaskets was well-known in the art at the time of invention and it would have been obvious to use a metal gasket to create a seal between Seki's sensor base and the fluid passage to which the sensor base is attached. (Gaskets seal via the compressive force (thrust) applied thereto, with rigidity of the surrounding structural components being necessary to the application of such force.)

Regarding claim 7, see the analysis of claim 3.

Regarding claim 12, see the analysis of claim 5 above.

9. Claims 4, 8, 9, 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Kuno (as set forth under paragraph 8 above), further in view of Kinard.

Seki and Kuno disclose the invention as claimed, including an insulated film (113) formed on the back side of the fluid contacting surface of the corrosion-resistant metal

Art Unit: 3753

substrate, and discloses a metal film to form the sensor elements (col. 4 lines 38-50; regarding the strain sensor, see the analysis of claim 1). Seki nor Kuno discloses a protection film to cover the insulating film and the metal film. Kinard teaches that it was known in the art at the time of invention to protect a metal film with a protection film (266, 268). To protect Seki's metal film, it would have been obvious to use a protection film as taught by Kinard.

Regarding claim 13, see the analysis of claim 5 above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM MCCALISTER whose telephone number is (571)270-1869. The examiner can normally be reached on Monday through Friday, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Huson can be reached on 571-272-4887. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/WILLIAM MCCALISTER/
Examiner, Art Unit 3753

/Stephen M. Hepperle/
Primary Examiner, Art Unit 3753

WM
3/14/2009